AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1.   (Currently Amended) A liquid crystal display (LCD) device, comprising:

a gray signal modulator for receiving gray signals of the input image data, and for outputting modified gray signals by considering the current and the preceding field image data, [[or]]and by considering the character of input image data; said gray signal modulator further comprising:

an input terminal for receiving the gray signals of input image data;

a frame memory for storing the preceding field image data of the input gray signals;

a controller for controlling the frame memory and the reading and writing processes thereof;

a signal preprocessor for processing the gray signal from the input terminal or detecting the character thereof; the signal preprocessor considering the differences between the current and preceding field image data for reducing the noise induced from the input gray signals, and having further function to cover compensation if the frame rated is varied;

a gray signal data converter for outputting the modified gray signals by considering the gray signals of the preceding field image data transmitted from the frame memory and the outputs from the signal preprocessor, and

an output terminal for transmitting the modified gray signal to the data driver;

a data driver for converting the modified gray signals into the corresponding data voltages for driving the liquid crystal molecules in each to produce image signal;

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a gate driver for continuously supplying the scanning signals, and

a liquid crystal display panel, comprising a plurality of gate lines for transmitting said
scanning signals, a plurality of data lines being insulated from and crossing the gate lines
for transmitting image signals, and an array of pixels forming by the areas surrounded by
the said gate lines and said data lines.

2. (Cancelled)

3. (Cancelled)

4. (Currently Amended) The gray signal modulator as described in claim [[2]]1, wherein
the signal preprocessor is specifically designed for detecting a certain character of input
gray signal for providing the gray signal data converter to select a suitable converting
scheme.

5. (Currently Amended) The gray signal modulatorpreprocessor as described in claim 3,
wherein the detection of said character of input gray signal data includes the detection of
different video systems, different frame rates, different images with different signal-to-
noise ratios, different interfaces or user dependent parameters.

6. (Currently Amended) A method for driving a LCD device, comprising:
inputting gray signals of input image data into a gray signal modulator;

comprising a signal preprocessor, which has function for reducing the noise of input gray
signals by considering the difference between the current and the preceding field image
data, wherefrom the input gray signal is considered as signal and is outputted directly if the
difference exceeds a presettingnoise threshold, otherwise the input gray signal is
considered as noise and is outputted after noise reduction modification, and has further
function to cover compensation if the frame rate is varied;

modifying the input gray signals into modified gray signals by the gray signal modulator;
outputting the modified gray signals to a data driver;
converting the modified gray signals into corresponding image data voltages by the data

driver, and

driving each pixel of the LCD device by the image data voltages, thereby achieving the

desired brightness in each pixel of the LCD device[[.]]wherein the method for noise

reduction further satisfies

$$F'_n = F_n \ \underline{if|\ F_n - F_{n-1}\ |\geq N_{th}}\text{;}$$

$$F'_n = F_{n-1} + a(F_n - F_{n-1}) \ \underline{if|\ F_n - F_{n-1}\ |< N_{th}}\text{;}$$

wherein F_n is the current field image data, F_{n-1} is the preceding field image data, F'_n is the

modified current field image data, N_{th} is a presetting noise threshold⬚and a is a presetting

parameter, which satisfies $0 \leq a < 1$, or can be changed in accordance with the noise level,

satisfying $a = f(F_n, F_{n-1}, N_{th})$.

7. (Original) The method for driving a LCD device as described in claim 6, wherein the method for modifying the input gray signals by the gray signal modulator is achieved by considering the current and the preceding field image data, and by considering the character of input gray signals, thereby outputting the suitable modified gray signals.

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Original) The method for driving a LCD device as described in claim 7 wherein the method for modifying the input gray signals by the gray signal modulator further comprises a signal preprocessor for detecting a certain character of the input gray signals and then sending a flag that represents said character to the signal converter for providing different signal converting schemes.

12. (Original) The method for driving a LCD device as described in claim 11, wherein said character of input gray signals detected by the signal preprocessor includes different video

systems, different frame rates, images with different signal-to-noise ratios, different interfaces or user dependent parameters.

13.   (Original) The method for driving a LCD device as described in claim 11, wherein said different signal converting schemes can be achieved by using multiple look-up tables.

14.   (New)   The gray signal modulator as described in claim 1, wherein the signal preprocessor is specifically designed as a noise-reduction preprocessor for reducing the noise induced from the input gray signals.